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| 10/027,327 | 12/20/2001 | Shi-Choon Lee | DKC 1800 | 1597 |

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| EXAMINER |
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WYROZEBSKI LEE, KATARZYNA I

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| ART UNIT | PAPER NUMBER |
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1734

DATE MAILED: 09/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/027,327

Applicant(s)

LEE ET AL.

Examiner

Katarzyna Wyrozebski Lee

Art Unit

1714

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 0402. 6) ☐ Other:

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

2. Claims 4, 5, 7-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1 the applicants state that component A of the composition is aminosilane coupling agent. At the same time claim 4 recites that the glass fiber is pre-treated with silane coupling agent, which contains functional groups such as vinyl, epoxy, mercaptan, amine and acryl. It is not clear if the applicant refer to the same coupling agent as the one in claim 1 or if it is additional or second coupling agent. The applicant is requested to properly amend the claims to make proper distinction. If the coupling agents in claim 1 and 4-5 are the same then the applicant has not narrowed the scope of the independent claims. For more prompt prosecution of the application, the examiner will treat claim 4 as reciting additional coupling agent.

Claim 7 contains limitation of the amount of graft monomer being "up to about 35 parts". The above limitation renders claim indefinite, since it is not clear if the amount of the grafting monomer is "up to" 35 parts or "about" 35 parts.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-3, 6, 10-15 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 07-33484 ('484).

Japanese prior art '484 discloses composition comprising styrene/acrylonitrile copolymer, glass fibers and aminosilane.

According to [0010] of the specification of '484 the SAN polymer contains 10-50% of acrylonitrile content, wherein by virtue the balance of 50-90% will be styrene. In more preferred embodiment, the amount of acrylonitrile utilized is in a range of 10-30 % by weight [0010]. Other monomers besides acrylonitrile can also be utilized. These monomers include acrylic acid, acrylamide, acrylamides and esters of acrylic acids.

Second component of '484 is silane coupling agent utilized in amount of 0.5-2 % by weight [0012]. Coupling agents of '484 include gamma-aminopropyl triethoxy silane, N-beta-aminoethyl-gamma aminopropyl trimethoxysilane, methacryloxypropyl trimethoxysilane and the like [0011]. The example [0020] utilizes gamma-aminopropyl triethoxy silane.

Glass fibers are utilized in amount of 10-40 wt % as depicted in [0016] of the Japanese prior art.

Art Unit: 1714

According to examples of '484 ratio between the polymer and glass fibers utilized in the composition is 80:20 [0025] and 70:30 [0029].

In the process of '484 the composition is processed utilizing extruder to make molded article [0016]. Claim 11 of the present invention is also rejectable over '484 prior art since it is in process-by-product format. According to *In re Thorpe*, 777 F.2d 695, 698 227 USPQ 964, 966 (Fed. Cir. 1985), in such claims determination of patentability is based on the product itself and not on its methods of production, absent showing of criticality of the process steps (See MPEP 2113).

In the light of the above disclosure, '484 prior art anticipates requirements of claims rejected above.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

Art Unit: 1714

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 4, 5, 7-9, 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 07-33484 ('484) as applied to claims 1-3, 6, 10-15 above, and further in view of JAGAWA (US 5,811,491).

The discussion of the disclosure of '484 from paragraph 4 of this office action is incorporated here by reference.

The difference between the present invention and the disclosure of '484 prior art is recitation of graft rubber and pre-treating glass fibers as well as process.

With respect to the above difference, the prior art of JAGAWA discloses composition comprising styrene/acrylonitrile copolymer in an amount of 10-80 wt %, styrene/phenylimide/acrylonitrile terpolymer in an amount of 10-60 wt %, grafted rubber in amount of 5-20 wt % and glass fiber in amount of 5-35 wt %

Art Unit: 1714

According to claim 6 of JAGAWA, rubber is grafted with 25-60 wt % of styrene monomer and with 5-40 wt % of acrylonitrile monomer. The amounts of the monomers chosen to graft the rubber are adjusted so that the impact resistance, thermal resistance and anisotropy do not deteriorate (col. 4, lines 9-17). Addition of such graft rubber into the styrene/acrylonitrile composite comprising glass fibers allows for improved physical appearance such as surface smoothness (col. 8, lines 45-46).

Glass fibers of the prior art of JAGAWA are pre-treated with silane coupling agents such as vinyl triethoxysilane (col. 5, lines 6-12) or glycidyl containing silane. Glass fibers are pretreated with silane coupling agent in order to increase the adhesion between glass fibers and matrix SAN polymer.

In the process of the prior art of JAGAWA, there is no limitation on the mixing order. Some components such as polymers and additives can be pre-mixed and the rest such as glass fibers added to the mixture in molten state (col. 9, lines 4-7). Steps taken concurrently are generally equivalent to those taken successively. In re White, 1939 CD 365; 39 F2d 974; 5 USPQ 267 (1930).

Addition of the rubber components provides molding composition with increased impact resistance while pre-treating glass fibers with silane coupling agents is process already established, that increases adhesion between the polymeric component and the fiber.

In the light of the above disclosure it would have been obvious to one having ordinary skill in the art at the time of the instant invention to utilize the rubber of JAGAWA as well as pre-treated glass fibers and thereby obtain the claimed invention. Utilizing these two

Art Unit: 1714

components would increase impact resistance, thermal resistance and anisotropy as well as adhesion between filler and polymeric matrix.

9. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 07-33484 ('484) as applied to claims 1-3, 6, 10-15 above, and further in view of JP 05-331335 ('335).

The discussion of the disclosure of '484 from paragraph 4 of this office action is incorporated here by reference.

The difference between the present invention and the disclosure of '484 prior art is further limitation of the process of the present invention.

With respect to the above differences, '335 discloses molding composition comprising SAN polymer and glass fibers and aminosilane.

In the process of '335, polymers are first mixed and then glass fibers are added. The glass fibers are added last so that their distribution is uniform. From the example in [0019] it is also stated that the aminosilane surface treats the glass fibers is in the melt mixture of the pellets, wherein term pellet refers to the polymers. Therefore it can be concluded that the aminosilane is added to the polymer before the glass fibers so that the glass fibers do not pre-react with silane.

Using the method of '335 affords SAN polymer composition, which comprises well dispersed glass fibers.

In the light of the above disclosure it would have been obvious to one having ordinary skill in the art at the time of the instant invention to utilize the process of '335 in the composition

Art Unit: 1714

of '484 and thereby arrive at the present invention. Utilizing the process of '335 would still afford well mixed glass fiber reinforced SAN composition that can be injection molded.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katarzyna Wyrozebski Lee whose telephone number is (703) 306-5875. The examiner can normally be reached on Mon-Thurs 6:30 AM-4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (703) 306-2777. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Katarzyna Wyrozebski

KIWL

September 3, 2003.